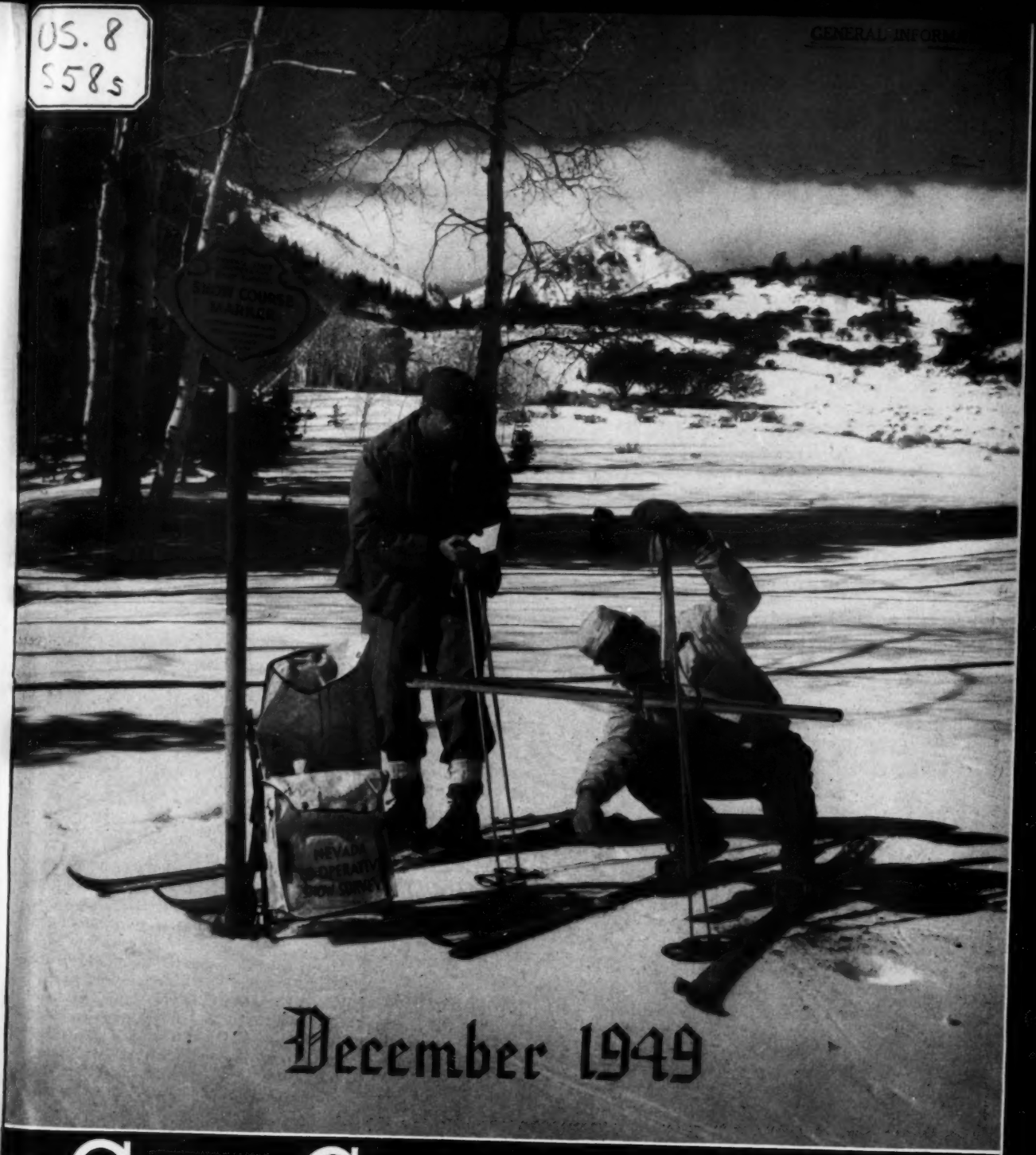
US. 8
S58s

GENERAL INFORMATION



December 1949

SOIL CONSERVATION

OFFICIAL ORGAN OF THE SOIL CONSERVATION SERVICE

SOIL CONSERVATION •

DECEMBER - 1949
VOL. XV - NO. 5

CHARLES F. BRANNAN
SECRETARY OF AGRICULTURE

HUGH H. BENNETT
CHIEF, SOIL CONSERVATION SERVICE

ISSUED BY SOIL CONSERVATION SERVICE, U. S. DEPARTMENT OF AGRICULTURE
WASHINGTON, D. C.

☆ THIS MONTH ☆

Page

SPEEDING SCIENCE TO THE FARM 99
By William L. Southworth

WINTER PLANNING WITH A STEREOSCOPE 102
By Austin L. Patrick

DISTRICTS VIE WITH DISTRICTS IN SILVER STATE 104
By Ralph Partridge

STRIP MINING AND LAND RESTORATION 107
By Grover F. Brown

SEVEN YEARS OF SCHOOL CONTESTS 110
By Harley A. Daniel, Louis E. Derr, and Edd Roberts

FARM ON ALL-DAY TELEVISION SHOW 111
By Bill Givens

WE'RE SAVING SOIL IN PUERTO RICO, TOO 113
By Otto L. Pike

EXPERIENCE WITH IRRIGATED PASTURES IN COLORADO 115
By R. H. Searway

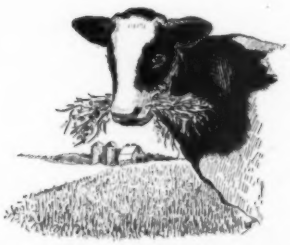
NOTES FROM THE DISTRICTS
Northeast 116
Southeast 117
Upper Mississippi 118
Western Gulf 118
Northern Great Plains 119
Southwest 119

WELLINGTON BRINK
Editor
Art Work by
W. HOWARD MARTIN

SOIL CONSERVATION is published by direction of the Secretary of Agriculture as administrative information required for proper transaction of the public business, with approval of the Director of the Budget. SOIL CONSERVATION supplies information for workers of the Department of Agriculture and others engaged in soil conservation.

10 CENTS PER COPY **$1 PER YEAR**
FOREIGN—$1.50 PER YEAR

25 percent discount on orders of 100 or more subscriptions mailed to a single address



STEERS GAIN ON FESCUE.—Fifteen steers were put on a 10-acre field of Suiter's grass (Kentucky 31 fescue) and white clover at Fort Pillow (Tenn.) Penal Farm. Before going into this field the average weight of the steers was 580 pounds each. All they had to eat from November 1948 was the fescue, white clover, and a salt block. Water was hauled to the watering trough each day. In January 1949 the steers were reweighed and the average weight was 651 pounds, a gain of 71 pounds each in 66 days on this pasture.

FRONT COVER.—It won't be long now before the snow starts piling up in the mountains, storing the moisture on which thousands of farmers rely for profitable yields. Methodical measurements are made by SCS technicians, on which are based estimates of moisture that will be available during the growing season. In December 1939, in July 1941, and on other occasions SOIL CONSERVATION Magazine has printed articles dealing with snow surveys and runoff forecasts based on such surveys. This month's cover shows the weighing of a snow-sampling tube (filled with snow) to determine water content. It was taken on the Baker Creek Snow Course, White Pine County, Nev. The photographer was Robert H. Branstead.

All orders go to the Superintendent of Documents, Government Printing Office, Washington 25, D. C.

US. 8 S58s

SPEEDING SCIENCE TO THE FARM

By WILLIAM L. SOUTHWORTH

How much irrigation water can be applied to sloping fields without danger of erosion? Seeking the answer here are Karl O. Kohler (holding pail) and S. O. Stamm, regional engineer and technician of SCS, respectively. This picture was made during the "learn by doing" conference at Redmond, Oreg., last summer.

THE BENEFITS of current scientific findings are getting to Pacific coast irrigation farmers more quickly as a result of a unique partnership between SCS forces engaged in research and those assigned to soil conservation districts.

Over the past few years, this close teamwork has paid off handsomely in speeding the adoption of better methods of handling irrigation water. It has also heavily emphasized the value of solid scientific backing for recommendations. Trial and error methods in irrigated sections of the far West are rapidly becoming a thing of the past as technicians and farmers come to rely on facts provided by research and the application of research findings in the field.

The new partnership may have been born of impatience. Over a period of many years, first under the leadership of W. W. McLaughlin and later under George D. Clyde, SCS irrigation research had accumulated a large store of information concerning the conservation of soil and water on irrigated lands. In this body of information were the answers to many of the most pressing irrigation problems. Research workers knew, for example, that too much irrigation water applied to sloping land caused erosion, waterlogging, leaching, and in some instances, destructive alkali conditions. Through long study, they also had discovered

NOTE.—The writer is information specialist, Soil Conservation Service, Portland, Oreg.

857977—49——1

why some soils were able to absorb and hold larger quantities of water than others and how to put the right amount of water into the soil to benefit crops of various kinds growing under various conditions. They possessed a rich fund of data vital to the maintenance of a permanent irrigated agriculture in many parts of the West. The challenge was to get this knowledge out to the farms.

Over a period of years, improved irrigation practices resulting from research had gradually found their way into use on a considerable number of farms. But the adoption of conservation methods was not sufficiently widespread, nor were SCS scientists satisfied with the speed with which farmers took to improved methods. It was this lag between research and application that made them impatient.

In the early days of soil conservation an SCS demonstration project was set up on 40,000 acres of irrigated land in the Kittitas Valley of Washington. Technicians worked with farmers to devise methods to reduce serious erosion losses on sloping lands and to increase the efficiency of water application, which in many instances was less than 35 percent of the water applied.

Field trials and the application of research findings were projected into farm irrigation operations for the first time.

Farmers were immediately interested. After they understood the movement of irrigation water to the plant-root zones and the amount of water the plants actually required to sustain production, they began to revise their irrigation systems and water-application methods with the purpose of achieving "conservation irrigation." Results showed that they were saving money, labor, and water and were getting a more uniform production and it was strikingly apparent that they were making a major reduction in the amount of soil washed into waste ditches and onto county roads.

From this original project the practices and methods were carried out to CCC camp areas and, later, to the newly formed soil conservation districts.

As conservation gradually spread to more and more irrigated areas in the Pacific region, it became apparent that if the tempo was to be speeded up it was important to devise an organized procedure for training SCS technicians so that they, in turn, could train farmers.

Shortly after the end of the war, Wayne D. Criddle, now in charge of the Boise, Idaho, research center, hit on a novel idea. The previous year he had been requested to assist the technicians at Ashton, Idaho, in determining the proper length of run and the amount of water to apply on a local shallow-soil problem area. After making the field tests and setting up recommendations for an irrigation guide, he began to wonder, "Why not take the findings of research directly to Service technicians and fit them to the conditions in the localities in which the technicians were working?" Here would be a way to put research findings to work in a rapid and effective manner.

Criddle, after securing support and encouragement from George Clyde, chief of irrigation and water conservation research, laid his idea before Regional Conservator J. H. Christ and Karl O. Kohler, regional engineer. Christ and Kohler were enthusiastic. They promptly called a small group of technicians working in irrigated sections together for a "skull" session with Criddle. The first meeting at Pocatello, Idaho, in March 1946, was a preirrigation-season meeting to acquaint field personnel with the proposals and to establish a basis for an "on the farm" training conference. The research scientists began by explaining the basic principles of applying irrigation water to the soil and the research findings on water requirements, rate of water application, and methods of application. The technicians were shown how to compute the water intake rates on fields of varying slope, soil depth, and type. At the same time, methods for determining the amount of waste water and the degree of erosion damage were explained along with ways for determining how much of the water applied actually benefited the growing crops. The operations personnel explained the place of irrigation guides in the planning and application of conservation irrigation and how the research findings would be used to substantiate and supplement the guide. Finally, the plans for the field conference were explained.

The following summer the first field-irrigation conference was called at Jerome, Idaho. It was divided into two parts. The first day, with an evening session, was spent discussing procedures. The second morning was spent in the field on irrigation trials for technician training. For field work the men were divided into small groups and each group irrigated a part of a farmer's field, carefully recorded the results, and then reported findings to the conference. Recommendations

were developed for the irrigation guide, then in preparation for that area. The second afternoon was used to show a large group of local farmers the safest and most efficient method of irrigating their crops under similar field conditions.

At the end of the first full-scale conference of technicians and research workers, both groups were pleased. The technicians left with a new fund of knowledge and a technique for obtaining additional information that could be put to use immediately on return to the soil conservation districts. They had new confidence in the recommendations they would make on conservation irrigation. The research people, too, were confident. They knew they had taken the first step toward bridging the gap between research and the application of research findings.

The idea of linking research more directly to work on the land took root quickly. The first meeting was followed in 1947 by similar meetings. The sound value of the arrangement, however, began to appear in 1949.

With facts obtained from their sessions with Criddle and his staff, technicians assigned to the Gooding, Wood River, and North Side Soil Conservation Districts in southern Idaho suggested that the district supervisors sponsor demonstrations of improved irrigation methods. The technicians volunteered to conduct tests and experiments in front of visiting farmers in much the same manner as Criddle and his staff had done in sessions with them. The suggestion met with instant appeal.

Late in June of '49 some 100 farmers turned out for a field day at Gooding, Idaho, sponsored jointly by the Gooding and Wood River Districts. The nearby North Side Soil Conservation District held a similar demonstration a few weeks later for a large group of veterans. Criddle or members of his staff were on hand at both gatherings to help technicians with explanations of research findings and to make computations of soil and water losses under different irrigating conditions. Similar conferences were held this year at Yerington, Nev., and Weiser, Idaho. Training conferences were held in Salt Lake City, Utah, and last year in Scottsbluff, Nebr., and Glendive, Mont.

Key to the success of the novel working arrangement is the manner in which the results of research are presented to technicians. Insofar as possible, experimental work is duplicated in front of them. Later, the operations people themselves carry out similar experiments under the watchful eye of the scientists.

A typical meeting of research and operations personnel was held at Redmond, Oreg., last July. It was conducted jointly by Sterling Davis of Criddle's staff, and Dell G. Shockley, assistant regional engineer. Thirty technicians from irrigated sections of Oregon assembled in the Redmond High School for classroom discussion on fundamentals and explanation of the techniques used in irrigation research. Later in the day, all of the points discussed were demonstrated in the field.

At the close of the first day's session, the group was divided into five teams consisting of six men each. Cooperating farmers in the Mid-State Soil Conservation District had previously set aside parts of fields on which each team would conduct experimental work similar to that of the first day's meeting.

Early next morning each team went to an assigned location. The first problem was to ascertain the moisture content of the soil and determine whether irrigation was necessary and, if so, how much water should be applied. Procedures were provided by Davis and Shockley. Next, exact measurements were made of the slope of each field, depth of topsoil, and length of irrigation furrows, and determinations were made of type of topsoil involved and kind of material lying underneath.

At Redmond each team of technicians was assigned four furrows to irrigate and study. At the top of each furrow, holes large enough to contain a 3-gallon bucket were dug in advance of irrigation so the water going into each furrow could be measured volumetrically with the use of a stop watch. Similar holes were dug in each furrow at one-fourth and three-fourths the distance down the slope. At the same time, cross sections were made of each furrow so that accurate measurements could be made later of erosion damage.

In the first furrow, a large head of water was released in a deliberate attempt to cause erosion. A lesser volume was turned into the second and third furrows and a small head turned into the fourth. Members of each team kept careful records on the rate at which each stream of water advanced down the furrows and, with buckets, periodically measured the flow past each station in the four furrows.

(Continued on page 103)

WINTER PLANNING WITH A STEREOSCOPE

By AUSTIN L. PATRICK

EXPERIMENTAL WORK done in winter "off-farm" planning by three western Massachusetts soil conservation districts is suggesting a way to develop more and better conservation farmers, to speed up complete farm planning by making more effective use of farmers' and planners' time, to reduce backlogs of applications for plans, and to develop more interested and efficient district governing bodies.

This system does not relegate farm planning to a routine, nor eliminate professional skill, and it can be applied without upsetting established procedures. The only variation is the transfer of planning to months when farmers and technicians and district supervisors have more time to get the work done. It overcomes an objection to most other "off-farm" planning proposals because it reduces the generalities in planning talk by focusing each farmer's attention on his own particular erosion problems.

The system, devised under the leadership of Dr. Benjamin Isgur, district conservationist at Northampton, Mass., had two trial runs in Franklin, Hampshire, and Berkshire Counties last winter, first with a small group of veterans, and next, after some modifications, with another group of farmers. Results were highly satisfactory in both groups; 17 of the 20 farmers accepted complete farm plans.

The program starts with the district supervisors and requires their complete willingness to assume full responsibilities in their positions of leadership. They begin after the full harvest season rush by inviting carefully selected farmers to have their farms planned at a winter meeting through use of a new system in which their cooperation will be helpful. The surveyor is supplied with the names of the farmers who accept. As few as 6 and as many as 14 have been handled at one time. A survey is made of each farm before the planning meeting is to be held. This gives the planner time to make and color the land-capability map and become acquainted with the farm, which he will not see before the plan is made.

NOTE.—The author is regional conservator, Soil Conservation Service, Upper Darby, Pa.

Paul Beardsley, farm manager at Groton, Mass., working at winter-planning with stereoscope.

The meeting is held in a public building where desks or tables are available. The session opens with a short nontechnical discussion of the program for the meeting and the use of stereoscopes. Each farmer receives a land-capability map for his farm, and a movie, "Know Your Land," is shown. It has been noted that most farmers quickly look at their own farm maps to see if some of the information obtained from the film can be used there. Next comes a showing of slides illustrating conservation practices favored on district farms. These are tied in with the land capabilities in the local area.

The farmer is then ready to get down to work with a technician, one being present for each farmer. On the desk are stereoscopic maps and a stereoscope. Farmer and technician start with the farm-organization sheet. This and the conservation survey provide the complete background for the planning. The farmer has the land-capability map, the farm-organization sheet, a plain photographic map of his farm, and the stereoscopic equipment. The planner has his technical guide. Together they study the situation and its problems and develop the complete conservation farm plan, with the understanding that it will be rechecked by the planner and farmer in the

fields when spring comes. The meeting usually sees the farmer's acceptance of the plan and an agreement on the date when the planner will visit the farm to do the rechecking and start initial practices.

Dr. Isgur has found that slight modifications are necessary here and there before the plan will be ready for another trial this winter. The main change is that all the interested farmers will be called together for a general meeting. At that time appointments will be made with the technicians for individual office visits so that the farmer and technician can have all the time they need for planning.

Besides utilizing winter months more advantageously, there are other benefits. For example—

Technicians have 25 to 35 percent additional time to spend in the field with other farmers.

Travel time of the technician is saved because in one visit to the farm he can recheck the plan and start the farmer on one or more practices.

Keener farmer interest is developed because there is more time to discuss all his operation problems rather than just the one or two that may be plaguing him most when he is the busiest.

The farmer becomes a better conservationist because he has the opportunity to see and study slides and other materials, which he could not see or use when planning is being done in the fields at his farm.

Field planning (rechecking) is reduced because the farmer and the planner have an understanding of just what is involved. This enables them to reach decisions quickly on what changes may be desired, thus eliminating the need for any additional office time in revising the plan.

This system can be used by farmers who already have farm plans, but who desire to revise or review them. Likewise, it fits into the natural leader-neighborhood group program.

Disadvantages found last winter are relatively few. It does take time to train farm planners to use the new system and to become adept with the stereoscope. Initial resistance to a change sometimes must be overcome.

It is necessary to have a well-trained soils man in the area, and usually at the planning meeting.

Some farmers have difficulty in reading stereoscopic images and require more time than others for adjustment. A simple and inexpensive way of producing vectographs—not yet developed—would eliminate the use of stereoscopes and make the job much simpler.

Summing up his experiences with the plan, Dr. Isgur says: "We have observed that farmers participating in winter "off-farm" planning have a better idea of what soil conservation is and what it means than do farmers whose plans are made during the rush of spring, summer, and fall work, when their minds are not completely free to think about their problems and about what a conservation plan can do for them."

SPEEDING SCIENCE TO THE FARM

(Continued from page 101)

Through careful check on the amount of water entering each irrigation furrow, the amount that passed the one-fourth and three-fourths points, and the amount that left the end of the field as surface waste, the teams were able to ascertain accurately the water intake rate of the soils in the various fields. At the same time, they were able to determine, by examining the soil surrounding the roots of growing plants, how much of the water applied actually benefited the crop and how much was lost through deep percolation. Equally important was the information gained concerning the erosive power of different heads of water under varying conditions of slope, soil texture, and cropping conditions.

From the facts revealed by the studies each team of technicians was able to make accurate recommendations as to the amount of irrigation water to apply in order to irrigate the crop thoroughly, yet safely, without waste of either water or soil. They were also able to tell farmers how many hours to irrigate, whether irrigation furrows were of proper length and gradient, and under what conditions water would cause serious erosion.

Said Joe B. Rogers, district conservationist for central Oregon, "Now we can actually show the farmers in our districts what we mean when we talk about saving water and soil."

TIMELY SUGGESTION.—What do you think of Dr. Patrick's discussion of winter planning with a stereoscope? How does Bill Southworth's article, "Speeding Science to the Farm," appeal to your common sense? And did you find that special water issue in October of interest?

This is a good time of year to mull over the ideas in SOIL CONSERVATION Magazine, and to pass some of them along to your neighbor. Maybe he doesn't know about this periodical. His subscription, $1 in advance, will make him a member of our growing family of readers. Tell him to send it directly to the Superintendent of Documents, Government Printing Office, Washington 25, D. C.

DISTRICTS VIE WITH DISTRICTS IN SILVER STATE

By RALPH PARTRIDGE

Fred Sykes.

CONSERVATION HISTORY was written in Colorado last September when a trio of experts made a 12-day, 2,400-mile tour into all sections of that State. The occasion was the wind-up of the second annual soil conservation contest sponsored by the *Denver Post* and Radio Station KLZ of Denver. It was the most intensive study of its kind ever made in such a short period. It took the judges into 13 soil conservation districts and onto 39 farms.

The 13 districts, selected in earlier competition, were the finalists in the State-wide contest. Each district was represented by three individual farms or ranches but was judged in addition on its work as a whole and on the administration and leadership displayed by the board of supervisors.

The farms and ranches, which among them represented virtually every type of agriculture in Colorado, were judged on the use of land according to its capabilities, the extent to which recommended conservation practices had been applied and maintained, and the quality of the work done.

Judges in the State finals were Fred J. Sykes of Salina, State conservationist for Kansas; Guy Stewart, extension service supervisor at Colorado A. & M. College, Fort Collins; and L. B. Cassel-

Guy Stewart.

NOTE.—The author is farm editor, *Denver Post*, Denver, Colo.

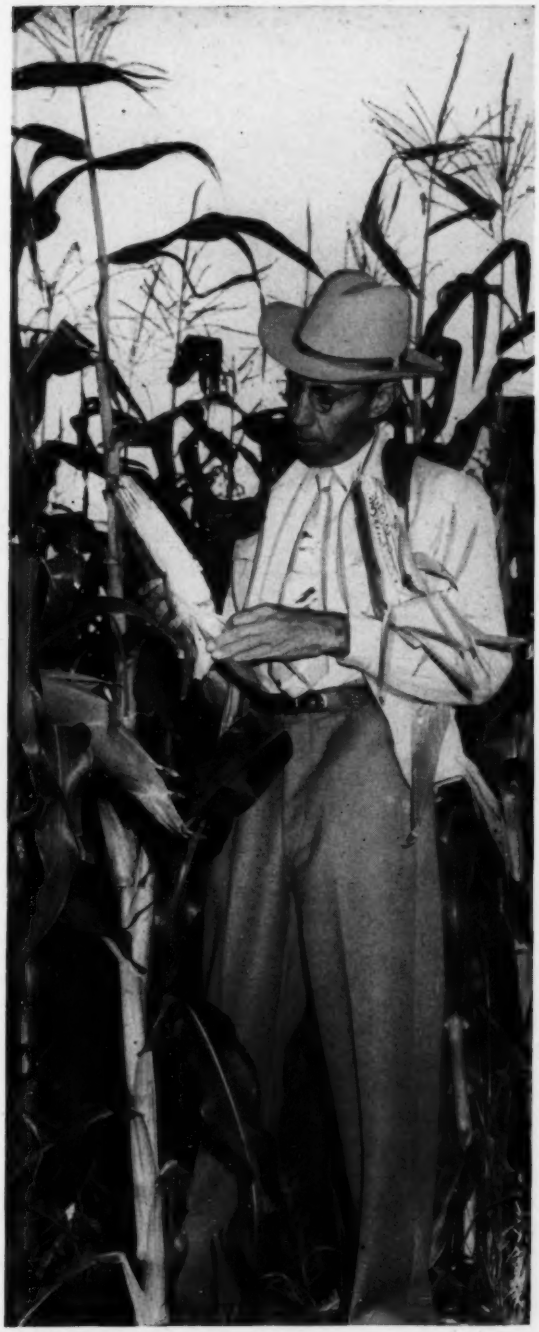
L. B. Casselman.

man of Mosca, Colo., president of the Colorado Association of Soil Conservation Districts.

These three carefully checked district operations and the accomplishments on each of the farms and selected the Fort Collins District as number one. Others in the first five were the Bent District, Las Animas, Colo.; the Mosca-Hopper District, Mosca, Colo.; the Fountain Valley District, Colorado Springs; and the La Plata District, out of Durango.

Each of these districts will receive a $500 cash award from the *Post* and KLZ. Each also will be recognized with a plaque, and the three farmers or ranchers who represented each district will get a framed scroll.

George T. Sinton, farm manager of the Sinton Dairy Farms, Colorado Springs, emerged as top



Sinton admires his fine hybrid corn which grew more than 11 feet high this summer on land that was pasture last year.

Bluegills abound in this small reservoir, one of many small lakes and ponds on the Sinton properties.

individual, with 492 points out of a possible 500.

Sinton operates about 2,000 acres which include almost every type of soil conservation problem in the Colorado Springs area.

He has 350 acres of irrigated land, including corn land, alfalfa, and irrigated pasture. The remainder is dry-land range. The soil ranges from extremely heavy to very sandy. Sinton has licked the problems presented by each.

Example: One small area of sand so nearly pure the casual observer detects no soil whatever in it has been planted to bromegrass, crested wheat, and clover. The brome particularly is thriving.

Sinton applied a little barnyard manure to this area and now is pasturing it lightly. The cattle, in addition to adding more fertility through manure, punch part of the vegetation into the sand, where it is decaying and adding more organic matter.

Extensive areas of the dry-land ranges have been reseeded. Erosion has been halted through contour furrows and the thick vegetative cover Sinton has developed. Gullies have been healed through

(*Continued on page 109*)

STRIP MINING AND LAND RESTORATION

By GROVER F. BROWN

NOTE.—The author is chief, agronomy division, Soil Conservation Service, Washington, D. C.

WHILE in England last summer, I made a study of the restoration of strip-coal mining areas. England has some of the same rehabilitation problems in connection with what they call open-cast coal workings as we have here.

Open-cast coal workings in England. Spoil banks are later dumped back and the land returned to farm use.

This land has been restored to grass and legumes, satisfactory stands resulting the first season. Land in background is still to be restored.

The war, with its revelations of food problems, brought the island to the grim conclusion that it could not afford to lose agricultural land.

Industry must have coal, the people in industry must eat. So must everyone else. England is making every effort to obtain the coal and the food from the same land. This means that land which was surface-mined must be put back into agricultural use after the coal has been removed.

Many problems rose in connection with full restoration and regrassing of these areas, but they are well on the way to being solved. Naturally, when the mining operations go to such depths as 30 to 170 feet, drains are destroyed and removal of surplus surface water becomes a major problem. The structure of the soil is completely upset and, in addition to this, there are acute deficiencies of soil nutrients, general lack of fertility, and unfavorable soil structure.

Nationalization of the coal industry means, of course, that the Government owns the coal and handles all marketing problems. Since the early war years several thousand acres have been requisitioned for open-cast coal workings in the farming areas. In most of these areas the farms are small and dairying is a major enterprise. In discussing with several individuals the way coal mining is handled, I found that the Government makes test borings for coal and determines the amount of overburden and the thickness of the coal veins themselves. With this basic information and the decision to mine the coal, the land is requisitioned from the landowner. In some cases entire farms have been taken over and in others only parts of farms. A county committee of 12 members determines a fair rate of rent for the farmer. This is paid for the period of time required for mining. In some cases the owner may or may not get enough rent to meet his needs completely and he may either have to sell off part of his livestock or make other arrangements.

After the land has been requisitioned, contracts are let to private companies for actual mining operations. The contracts specify that the topsoil shall be removed first and piled to one side. The subsoil, to at least a 3-foot depth, is moved next and piled separately, parallel to the topsoil. Then the contractor goes ahead and mines the coal in more or less trench fashion. As one trench is completed, the slag from another trench, instead of being piled again on top of the ground as it is in this country, is put back into the hole made by the first trench. This operation continues until all the vein is worked out, so that in reality the final trench is filled with material from the first trench. The contractor then must return the whole field or farm to as nearly the original contour as possible so that the drainageways match up with those of upper and lower fields. The subsoil then must be spread over the field 3 feet thick and then covered with about 6 inches of topsoil. Fences are then rebuilt where they were originally or set up in a new location more advantageous for utilizing the hay or pasture. Most of the fences I saw used concrete posts and no doubt were very much better than the farmer had before. This completes the mining contract.

The Government then limes the field with from 3 to 4 tons of ground rock, fertilizes with 800 to 1,000 pounds of superphosphate and about 200 pounds of sulphate ammonia, and seeds to a grass-legume mixture. After the grass becomes well-established, usually in the first or second year, the farmer may then return to his land and utilize the hay or pasture. The Government in some cases, as I got the picture, may carry along the top-dressing program for 5 years to be sure of a satisfactory stand of grass and legumes. Any sinking or pot-holing due to settling will usually occur in the first 5 years. At the end of that time the farmer regains full possession of his land, but he is urged not to plow until the land has been in grass and legumes for at least 10 years. This is designed to reestablish, to some extent at least, the desirable structural characteristics of the soil and to increase its organic and biological functions.

Naturally, the question of cost of rehabilitation comes up. I asked about it in every mining area I visited. In view of the fact that this is a rather new approach by the Government, cost figures were not generally available, but I did get an estimate of 10 cents to 20 cents per ton of coal mined, as an additional charge against the coal. In other words, the rehabilitation of areas disturbed by mining would not be economically feasible from strictly an agricultural point of view. But when this additional cost is applied to each ton of coal mined, it becomes a very economical job to put the land back into use after the mining operations have been completed.

I saw thousands of acres of pastures and grass-

legume hay that were from all appearances as good as many of the surrounding lands. One would never know that the land had been mined and the soil completely changed. Most of the fields were producing good grass and legumes and the goal had been achieved of utilizing the natural resources of coal for vital industrial purposes, and yet the land again was in a position to produce needed food for generations to come. I walked over many of these fields and was surprised at the growth obtained. It appeared, and a number of the men agreed, that even better results would be obtained with heavier rates of fertilization. The organic matter, of course, was largely gone after the mining operations, and the structure and tilth were poor. It would have been better had they mulched or used manure or other forms of organic matter before seeding. But by keeping the land in grass for 10 years, they felt it would be possible to reestablish the structure and the biological activity to nearly the original level.

It appeared to be easier to get a stand than to maintain it. Here again was revealed the lack of organic matter, the structural and biological features caused by mining operations. It will take a number of years of good grass and legumes growing on these lands to bring them back. Coal, nevertheless, is necessary for industry and this operation seems the best way to get coal and still have the land useful for farming. When one considers the advantages of strip mining compared with pit mining and the increasing use of power equipment, this problem looms much more serious in this country than previously. Strip mining recovers more than 90 percent of the coal in the vein as compared with 50 or 60 percent obtained from deep pit mining. The cost of pit mining is about two and a half times greater than that of open-cast mining. There is also a feature to consider in favor of strip mining in connection with the ease of the operation: Safety measures can much more easily be installed and fewer men are required to obtain a ton of coal.

Coal runs from 1,500 to 1,700 tons per acre-foot. The veins vary in depth, depending on circumstances, but a 4-foot vein will produce 6,000 to 7,500 tons per acre. In view of the cheaper cost of open-cast mining, it seems reasonable to me to consider a slight additional charge of a few cents per ton of coal mined, which would pay for the rehabilitation of the land and still enable operators to put coal on the market cheaper than by any other system.

Here in the States this destruction of land, our basic resource, is rapidly becoming of public concern. The problem of erosion, siltation of downstream channels, ruination of land for further agriculture, recreational, or other purposes is rapily coming to the attention of the public. Some of the States have made efforts to pass laws that would in some measure aid solution of this problem. In general, about all that is done, however, is the leveling of the spoil banks on top so that some reseeding of shrubbery or trees may have a better chance of success.

I think with the increasing amount of this type of mining taking place we need to give this method that the British are using very serious consideration. Restoring mined lands to use for either farming or forestry is well worth the attention of mining companies. There is no reason why we cannot have our coal and our farms, too.

DISTRICTS VIE WITH DISTRICTS

(*Continued from page 108*)

planting of shrubbery, which provides browse for cattle and feed for the birds that abound on the place.

Sinton rounded out his program by reclaiming 35 or 40 acres of waste land along an old creek bed. There a system of dams and ponds provides a wildlife area which at times attracts thousands of ducks and other types of waterfowl.

This farmer declares conservation is the sum total of many little things and says that in addition to the monetary benefits, he is deriving a great deal of satisfaction through his part in safeguarding the Nation's soil and water resources.

Sinton and other farmers and the judges were enthusiastic in their praise of the contest. They believe it is doing much to stimulate public interest in a vital cause.

On Monday, October 3, the three farmers or ranchers representing each of the top five districts were guests of the *Post* and KLZ at a dinner in Denver and guests of the Denver Chamber of Commerce at a noon luncheon.

Recognition banquets are being sponsored by various organizations in each of the five districts.

SEVEN YEARS OF SCHOOL CONTESTS

By HARLEY A. DANIEL, LOUIS E. DERR, AND EDD ROBERTS

These FFA members are classifying lands, studying soil-test charts, determining best cropping conditions and fertilizer needs during the 1948 soil conservation contest on the Red Plains Conservation Experiment Station, Guthrie, Okla. Photo by Tom Daniel, Oklahoma A. and M. College.

IN SCHOOL CONTESTS, which are gaining rapidly in popularity, young Oklahoma is learning the why and how of soil and water conservation.

And although it is mostly 4–H Club, Future Farmers of America, and Veteran Agricultural trainees who are taking part in most of these courses and exercises, here and there are groups of older farmers who are getting much useful information from similar activities.

NOTE.—The authors are project supervisor, research; State soil scientist; and extension soil conservationist; Oklahoma.

The purpose of such contests is to teach the student to put each piece of land to the use for which it is best suited and to treat it according to its needs for controlling erosion and improving fertility. In fact, all the practices and treatments necessary for developing and maintaining a permanent agriculture are stressed.

Students are given a better understanding of a coordinated program which includes sound land use, the right combination of conservation practices, the maintenance and improvement of soil

productivity, and economically sound conservation farming.

Contests of this nature have grown out of the 4–H Club and Future Farmers of America soil conservation schools and contests that have been held annually at the Red Plains Conservation Experiment Station, Guthrie, Okla., during the last 7 years.

Schools and contests usually take all day. Mornings are devoted to a study of soil conservation and improvement, while afternoons are set aside for the contests.

For schooling, the participants are divided into small groups and taught the difference between soils and classes of land that can be safely or cannot be safely cultivated. Also given attention are the methods of treating each type for maximum erosion control and production. The participants are taught to identify different grasses, legumes, and trees, and to recognize their value for conservation.

In the afternoon, contestants identify soils, classify land, and recommend the treatment necessary on a selected plot of land. This procedure continues until each class of land represented has been studied.

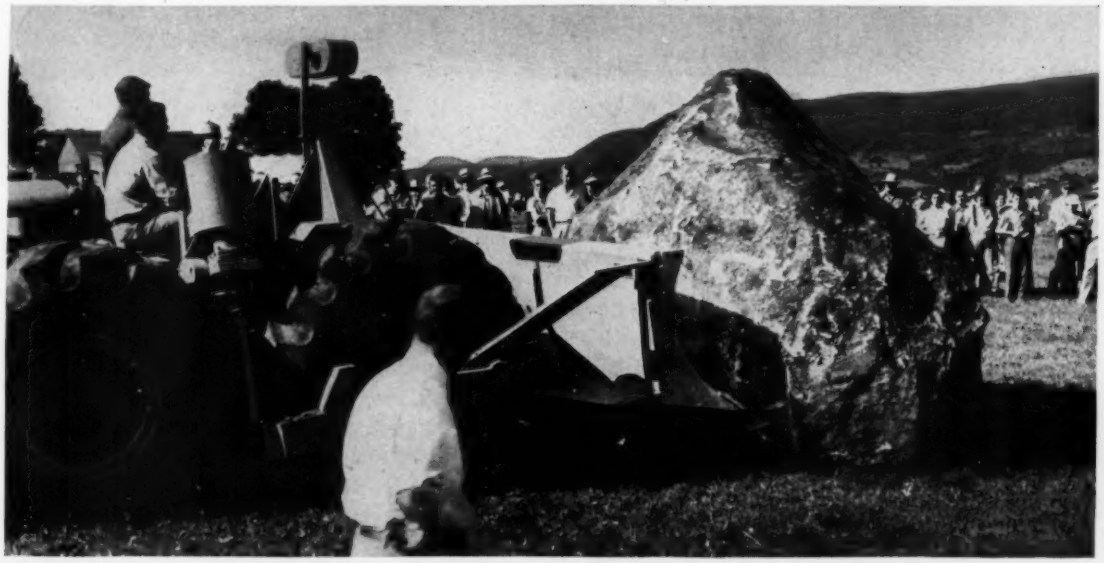
As each field is completed, papers are collected. Correct answers are then explained to contestants by the guide, who then gives each participant a chance to ask questions about the land, its treatment, and cropping systems.

Another part of the contest often consists of the identification of common grasses, legumes, and trees, and their seeds.

After the contest is over, scores are added and winners determined. Winners may be teams or individuals. Soil-saving and soil-use training of this type will bring about a greater appreciation for the land. It also will expedite the conservation movement.

FARM ON ALL-DAY TELEVISION SHOW

By BILL GIVENS



One of the big boulders nudged away and buried in the building of a farm pond.

TELEVISION HISTORY was made by Station WRGB on the Walter Hadala farm near Adams, Mass., on August 16. A day-long, continuous television program featured only the one event—the Berkshire County Farmers Field Day—which starred soil and water conservation and good land use.

NOTE.—The author is supervisor of farm broadcasting for the General Electric Company stations, Schnectady, N. Y.

Television crew on the job.

Inasmuch as Adams is outside the 50-mile radius usually allowed for satisfactory coverage, it was necessary to transmit this program by means of what is known as a two-hop relay. Here's how it works: WRGB's recently acquired 8-ton mobile unit picked up the various demonstrations and transmitted them from the Adams farm to a temporary relay tower atop nearby Mount Greylock. From Greylock the program was then beamed to the station's permanent tower atop the Helderberg Mountains west of Albany, N. Y.

Opening ceremonies at 8:45 in the morning included remarks by John Chandler, Massachusetts State commissioner of agriculture, and a flag raising by the Massachusetts National Guard. From 9 o'clock until quitting time late that afternoon, farmers and others who had television sets really received an eyeful of soil and water conservation—the first big face lifting in New England.

The first event televised was the construction of a farm pond. Commentary was provided by Ben Isgur, district conservationist in the Berkshires. Periodically we pulled our camera away from the pond to conduct interviews with many prominent agricultural personalities, such as Dr. H. H. Bennett, chief of the Soil Conservation Service.

Another morning high light of our telecast was the filming of the farm-equipment demonstration. Each of the eight major farm machinery companies represented was given an opportunity to display its equipment before WRGB cameras.

At noon we moved from the north to the south end of the Hadala farm to another of the power outlets installed for the occasion. During the hour allowed for moving cameras, appropriate farm films were presented to WRGB viewers.

In my 10-year association with radio, and my 2 years with television, never have I seen the likes of the show put on by bulldozer drivers to open the afternoon's events. Three bulldozers lined up about 200 feet away and in front of our cameras, each with two 5-ton boulders in front of it. Armed with these mighty playthings, they proceeded to move at top speed directly into our camera lenses—what a sight that was! One of the drivers came within 10 feet of the mobile unit, completely filling the television screen with this massive expanse of stone. The reaction of the technical crew was to open the emergency exit lest a hasty departure be indicated. As it turned out, the 10 feet between the boulder and mobile unit was ample, but two more rolls would have spelled disaster. It was an amazing spectacle, one which lasted for an hour, with these mechanical giants gouging immense craters in which to bury the rejected boulders.

Other events telecast that afternoon were tearing up a huge stone wall by power shovel; liming a 40-acre tract of pasture land; and, finally, the felling of timber in the Hadala wood lot—a dramatic ending to a thrilling day.

Our cameras caught many small incidents chock full of human interest. For example, a 2-year-old became separated from his mother, but through the medium of television was restored safe and sound because his mother was in the women's display tent where a television set had been installed, saw her little darling in the picture, and claimed him promptly.

Another program favorite was a 2-month-old baby, youngest person attending the field day.

A woman from New York State became so interested in the construction of the farm pond that she shut off her set, got in her car, and drove to Adams!

The effectiveness of this great open-air show—the first of its kind—was largely due to the technical crew, who labored long hours to make the program possible, and to Emerson Markham, manager of our stations, the man who conceived the idea of bringing this great outdoor event to the watcher at the fireside.

WE'RE SAVING SOIL IN PUERTO RICO, TOO

By OTTO L. PIKE

Pike records "marked success" in pineapple fields.

FOR 26 years I've been in Puerto Rico, the last 21 of them on the same property. In 1909 this farm was about as God made it, covered with forest trees, native grass, and used as pasture. That year it was bought by an American company from Buffalo, N. Y., and they immediately started clearing the land and planting citrus trees. I planted the last acre of grapefruit in 1931, as the company manager. Then in 1938 I bought the farm.

The groves were cultivated and planted to cover crops, usually crotalaria. The crotalaria is a legume, and makes a very thick and heavy growth; the stalks are woody and have a diameter of ½ to 1 inch, and are from 3 to 6 feet tall. Therefore, the ground cover was almost as good as under forest conditions, as far as erosion was concerned. The trees were planted in straight rows, paying no attention to slopes. Only once in a while on an unlucky day when we got a heavy rain right after cultivation, and before the cover crop got started, did we get any erosion.

Now, the nearly complete loss of our citrus market has greatly changed the cultivation practices on this property. From trees and cover crops we have changed rapidly to clean-cultivated row crops. The purpose of this narrative is to relate the differences of soil and water action with the change in cultivation, and to show the need for organized soil conservation districts. The Soil Conservation Service is making good progress in

NOTE.—The author farms near Arecibo, P. R.

Puerto Rico but there is great need for more work.

I can tell nothing not already known to people in close touch with conservation. I am just one more witness.

I started keeping a daily rain record from a gage outside my house on July 1, 1932. In the past 17 years the lowest rainfall in a calendar year was 43.89 inches in 1946, and the highest was 83.10 inches in 1938. The lowest calendar month was March 1947, with 0.15 inch, which came on the 31st of the month. The highest month was May 1936, 19.68 inches, which followed a 5-month drought. Our heaviest downpour was November 7, 1944, when we got 5.82 inches in 2 hours. Tremendous damage was done all over the island. A rain like this causes more erosion than years of ordinary rains. Most of our rains come in short afternoon showers. We never see fog and rarely have a cloudy day. It rains or the sun shines, and frequently both at the same time. All of this affects soil conservation. These violent showers make more and bigger ditches necessary in the fields. An inch an hour is the usual rate of rainfall here; it takes a very heavy thunder shower in New York to equal that.

The first fields that I planted after taking out the fruit trees were in straight rows, as usual in this region. Contouring did not occur to me as I had never had any experience with it, and there was no Soil Conservation Service in Puerto Rico at that time. Never having seen running water on this farm, it did not occur to me that there would be any. I was just like everybody else in these ignorant pre-soil-conservation days.

My soil is light sandy loam on 5 to 10 percent slopes. Spotted around on this general level are isolated hills of solid rock, covered with brush and forest trees, which no one would ever think of cultivating. On January 10, 1938, I planted a 9-acre field to straight rows of sugarcane. It had previously been an orange grove. Two days before we had had a 3-inch rain, so the land was full of water and just right for planting. For the next 3 days we had a shower each day, saturating the soil. This was followed on the afternoon of the 14th with a rain of 5.10 inches.

Sugarcane seed (which is a piece of the stalk) is heavy, weighs 1 to 2 pounds, and will float. A third of the seed in this field, and all of the soft soil in the furrows, was carried away, leaving hard-bottomed furrows in the subsoil. Some of it was deposited at the ends of the furrows and in a public road that runs past the field. A great deal of the seed and topsoil was carried across the road to a lower field, and a pond an acre in size was formed where there had never before been a pond. I hauled back numerous cartloads of seed from the road and pond to replant but my good topsoil and fertilizer were lost forever. The pond dried up in a month, but every time it rained this low spot collected water again.

In January 1944, I again planted this field to sugarcane, but in the meantime had learned a little about soil conservation. The Soil Conservation Service had established an office and had been showing some of the farmers in this section how to prevent soil erosion. I made the rows level and on the true contour, with deep furrows. I was fortunate and did not get any cloudbursts just as the land was planted, but we did not have lots of rain. These level furrows held all the rains that came and there was no running water. The pond dried up permanently and the place is planted again. That level system did a good job, but I have since become convinced that the furrows should have some slope to guard against an occasional heavy rain. The cane fields I am planting this year are being given 1 percent of slope. Other crops, such as pineapples and gladioli, which are planted without furrows and do not give much ground cover, are being given a 2-percent slope. This makes necessary some drainage ditches, and these are put in every 6 feet of vertical change in elevation, or 200 feet in horizontal distance, whichever comes first. This has resulted in marked success in my pineapple fields. Two low spots that were always under water in rainy season (even when the land was in trees), are now dry and planted. Some spots that could not be planted previously because every rain started a stream flow are now being planted.

The benefits of contouring are immediate. The rains do not carry soil and fertilizer away. In a dry spell the crops do not wilt so much as previously for what little water falls stays about where it lands, and the plants have it for a longer time. I am getting more production per acre. Of course, the initial preparation of the land is more expensive, but over a period of years the investment pays off. The main ditches have to be made only for the first planting, for I do not plow through them but along them the following seasons.

SCS men have helped me right along. Recently a new district chief, just down from the States, was here. He said this is the most diversified and interesting farm he had ever seen, and I have the only roses, gladioli, ferns, and other flowers that he had ever heard of being planted on contour.

The oldest roses are in a 6-acre field we planted in straight rows (where I dug out a grapefruit grove), before I realized the need for contouring. Needless to say, the new field is contoured. It hurts every time I look at my old roses in a rain, for the water runs down every row, carrying off the fertilizer and fine sugar-refuse mulch. The sand plugs up the ditches by my driveway, and there is a long windrow of topsoil that is shoveled out of the ditches after every rain.

The only disadvantage of the contoured rose field comes when we have to spray with insecticides. It is impossible to drag hoses up the curved rows without damaging the plants, so I have put an extra man on each hose to lift them over the bushes. We are using 100-foot hoses, two on a sprayer. The same applies to any field that has to be sprayed. We are now using weed-killers on sugarcane that is sprayed. The curved and short rows bother some, but the fields are laid out so that there are no blind alleys, and the cultivator can always find a way out.

Once in a while there is a low spot from which water cannot drain. With the help of SCS technicians, we made ditches around the top so that no water could run in; all the water that gets in is what rains in, and evaporation takes care of that small amount. These spots are very fertile and crops that do not mind wet soil for a day do well.

The Atlantico Soil Conservation District, of which I am a part, is doing a very good job in this part of the island. So are the technicians of the Soil Conservation Service. They seem to enjoy showing us how to keep our soil from washing away. The district program will improve agriculture in Puerto Rico and will give us bigger yields for a longer period of time.

EXPERIENCE WITH IRRIGATED PASTURES IN COLORADO

By R. H. SEARWAY

THREE TONS of meadow hay per acre from a 2-year-old grass stand! This yield may sound high, but it should be the average rather than the exception in the Salida section of Colorado, thinks Al Predovich, who has cut 45 tons of hay off 15 acres on his Missouri Park farm this year.

Before going deeply into production, however, let's take a look at the history of Predovich's farm, which he acquired in 1940. Year after year he planted alfalfa or small grain, mostly the latter, and plowing, irrigating, and harvesting were annual tasks. There always seemed to be something to reduce the annual yields of small grain—either hail, a shortage of water, or cold, damp spring weather. The return from the small grain averaged only about $40 per acre, although he did have some wheat that produced 80 bushels per acre in 1946.

Discouraged with the crop yields, Predovich sought assistance from the Upper Arkansas Soil Conservation District in 1946, and received technical aid from SCS in planning a new cropping system designed to put each acre to its best use.

In January 1947 Predovich plowed 15 acres that had been in wheat, disked it two ways, harrowed it, and then leveled the field with the district-owned machine. He then drilled and cross-drilled the 15 acres at the rate of 22 pounds of seed to the acre. He used a mixture of 6 pounds each of smooth brome, meadow fescue and orchard grass, and 2 pounds each of alsike and yellow sweetclovers.

Predovich irrigated the field seven times during the growing season and kept all livestock off the new grass. In fact, he didn't even harvest the

NOTE.—The author is work unit conservationist, Soil Conservation Service, Salida, Colo.

hay in the fall of 1947, but let it fall back for winter production. The second year the meadow required only three irrigations with the water set for 6 hours in 300-foot runs.

When this 15-acre field was cut in July it yielded 3 tons of hay per acre, and then produced another half ton per acre, which is being grazed off this fall.

Predovich seeded another pasture of 7 acres in April 1948 and 15 acres more last spring. He used the same grass and clover mixture, except that on the 7-acre field he added 4 pounds of reed canary grass and 2 pounds of strawberry clover because this field was too wet for small grain due to the high water table. Cut this summer, these fields yielded 3 tons of hay to the acre and an additional half ton for fall grazing.

With hay selling at $15 a ton, this means that the 3½-ton yield gave a gross return of $52.50 an acre, with only haying and irrigation expenses to be deducted. Predovich estimates that it cost about $22 an acre to establish the irrigated pastures as compared with an annual cost of $14 an acre to plant small grain under his old cropping system.

His goal is 80 acres of irrigated pasture with enough cattle to do the harvesting so he won't even have to go to the expense of harvesting hay.

AT LAKE SUCCESS

Eighteen foreign technicians from thirteen countries, who received training with the Soil Conservation Service, participated in the recent United Nations Scientific Conference on the Conservation and Utilization of Resources at Lake Success.

Delegates presenting papers included: Marcos Orozco, chief, Soil Conservation Service, Guatemala; Manul Chavez Viaud, chief, Soil Conservation Section, El Salvador; U Aung Myint, senior agricultural assistant, Department of Agriculture, Burma; and René L. Ambroise, chief, Soil Conservation Service, Haiti.

Six who contributed papers read at the section meetings but were unable to attend: S. P. Raychaudhuri, soil scientist, Ministry of Agriculture, India; A. T. Sen, soil scientist, Ministry of Agriculture, India; A. G. Riaz, soil conservation officer, Ministry of Agriculture, Pakistan; M. H. Khan, forest officer, Ministry of Agriculture, Pakistan; F. Jurion, director general, National Institute of Agricultural Research of Belgian Congo; and Carlos Diaz Vial, agronomist, Ministry of Agriculture, Chile.

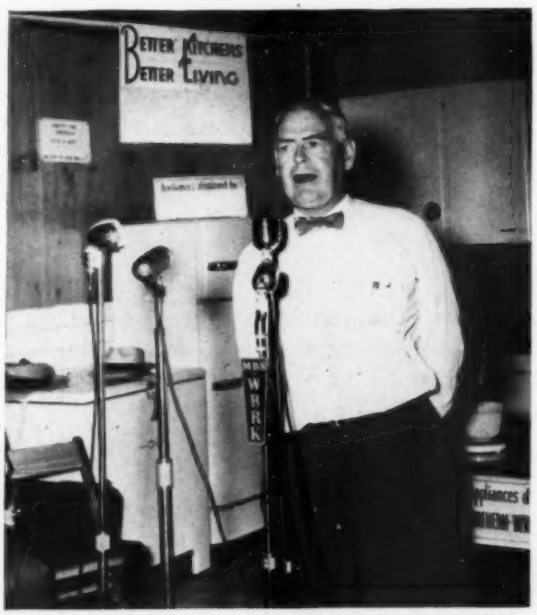
Eight delegates participated in the discussions of various section meetings: Gonzalo Andrade, assistant agricultural attaché, Mexican Embassy; Sebastian A. Romero, chief, Soil Conservation and Forestry Department, Venezuela; Henrique Delgado, agricultural engineer, Ministry of Public Works, Venezuela; Maung Kyi, forest officer, Shan State Department of Agriculture, Burma; J. K. De Haan, chief, Bureau for Soil Utilization, Indonesia; Suh Kwang Jin, soil conservation officer, Department of Agriculture, Korea; Hernan Uribe, assistant soil conservationist, Federation of Coffee Growers of Colombia; and D. G. Kelkar, soil conservation officer, Baroda State, India.

René L. Ambroise of Haiti was honored by being nominated chairman of one of the section meetings.

NORTHEAST

FOUR TOWNS—TWO STATES.—Next to the 40,000-foot overhead irrigating system, which carries up to 900 gallons of water per minute to his vegetable crops, visitors to Frank Clegg's farm at Seekonk, Bristol Soil Conservation District, Mass., are mostly interested in the fact that he gets his water from two farm ponds. Clegg's one-piece 65-acre farm lies in two States and four towns—Seekonk and Swansea, Mass., and East Providence and Barrington, R. I. Before setting celery, this farmer irrigates for twelve consecutive hours, which means putting 50,000 gallons on each acre.

SOUND FOR ALL.—"Soil conservation, as fostered by the Soil Conservation Service, is sound for us as farmers, and good for our communities, for the Commonwealth, and for the Nation," John Chandler, State commissioner of agriculture and chairman of the State Soil Conservation Committee in Massachusetts, declared recently.



John Chandler speaks at Berkshire farmers soil conservation field day.

PONDS AND PEACHES.—At a critical production period in the midst of last summer's drought, when leaves in his Elberta peach orchard were drying up and partly developed fruit was falling, Edgar Downing, an orchardist of Millbrook in Dutchess County, N. Y., resorted to a small farm stock pond that he had built a year earlier. Using an old

fire hose and a small pump, he applied 200,000 gallons of water to 2 acres of trees. When the crop from this block was harvested, the size of the fruit had increased fully a third. More, its development had been retarded enough to allow Downing to catch a more favorable market than otherwise. In addition, he says, the trees in this block are in better condition to set buds for the 1950 crop. Trees not irrigated have leaves with a yellowish tinge and new growth has been held back. The peaches on these trees ripened prematurely and lacked size compared with those in the irrigated block. "One irrigation paid for all the cost of building the pond," Downing maintains.

POND SAVES BUILDINGS.—A day's work with a bulldozer, excavating a simple farm pond on the site of a washed out, abandoned ice pond, paid dividends last August when flames attacked Willard T. Gaskell's barn near Rome, N. Y. When 60 firemen and 2 pumpers arrived from nearby towns, all the water available was in the pond. The barn was so far gone that they turned attention to the granary, tool shed, and farm home—all within 70 feet of the barn. The pond water saved the granary and tool shed and was doing good work protecting the house when a kindly wind veered its course and carried the sparks away. The pond, 40 feet square, with water 5 feet deep, was constructed under supervision of SCS technicians working with the Oneida Soil Conservation District.

FARM LABORATORY.—At his 450-acre dairy farm outside Ridgebury, Conn., Harold S. Goldsmith is developing a field laboratory for soil and water conservation. Many other farmers are watching his experiments closely, because they believe they can apply some of the same practices and quickly pay the costs out of increased income and reduced operating expenses.

Following a complete conservation farm plan developed by Walter Gonick, George Sweeney, Floyd Hileman, and Ted Powlowski, SCS technicians working with the Fairfield Soil Conservation District, Goldsmith has embarked on an ambitious schedule of muck-spreading, fence-removal, pond-digging, and drainage and irrigation work, all to be completed in 6 months, before winter settles down. He and the technicians say it will pay for itself in 2 or 3 years.

Most revolutionary phase of the program, at least locally, is the spreading of muck, taken from a swamp area, over 50 acres of pasture land. A dragline shovel scoops it from a swampy depression right on his farm and loads it into three tractor-drawn manure spreaders that shuttle back and forth over the pasture. Main purpose is to increase the water-holding capacity of the soil and retard runoff. Muck holds twice as much moisture as ordinary soil, because of its high organic content, and adds valuable nutrients to the soil. It is being spread two layers deep over 25 acres that have a fairly high runoff, and four layers deep over 25 acres that are dry and sandy with a high runoff. The treatment is expected to double, and perhaps triple, the pasture value. Drier areas have been useless, except in early spring or late fall. All will be seeded with red clover and Ladino.

One of the 25-acre fields results from a stone fence removal job that cost about $500. It pulled four separate fields into one. Removal of the old fences added a half acre of tillable soil and reduced Goldsmith's operating costs by removing impediments to tractors and other equipment. The saving in operating costs and the increased production will pay for the work in a year or two—certainly before another seeding is necessary.

Another Goldsmith project is a network of drainage trenches designed to turn 20 acres of worthless swampland into pasture. The system centers in a ditch 3,975 feet long, 30 inches deep, encircling the field and emptying into a 425-foot runoff ditch that empties into a farm pond. Two straight ditches, totaling 275 feet and 8 to 12 inches deep, cut across the field, dividing it into three minor drainage areas. The big ditch intercepts seepage and picks up runoff that ordinarily would damage lower fields. The two short ditches pick up some runoff and help take care of extra heavy rainfall. Reclamation of the 20 acres will cost between $75 and $100 per acre. It will transform currently useless land into pasture land worth $50 a year . . . pay for the work in 2 years.

Goldsmith is developing an aluminum-pipe irrigating system that works from three farm ponds, one at each end of the farm and the other about the center. One, with a 2-acre surface area, is where the muck is being excavated.

The purpose of the whole job is to put the farm in the best possible condition to produce high-grade feed for a high-testing dairy herd. Goldsmith has been successfully operating another 350-acre farm near Litchfield for 4 years. He has extensive interests in the magazine publishing field.

SOUTHEAST

TERRACES WITHSTAND CLOUDBURST.—When 5.2 inches of rain fell in 1½ hours in July, it washed away a railroad bridge above Alvin Emerson's farm near Cecilia, Ky., but did little damage to his terraced cornfield.

After watching water rush through his meadow in a stream 4 feet deep, Emerson figured his corn crop was gone. He had constructed seven terraces on the sloping 40-acre field last spring, as a part of a conservation plan with the Hardin County Soil Conservation District, but terraces were not expected to control cloudbursts.

To Emerson's surprise and satisfaction, the contoured corn stood up well under the downpour. In a few places the water had filtered over the edges of the terraces but the bottom terrace was the only one that had broken over and it had not washed away completely. Emerson said that he considered the break his fault as he

had neglected to build up a weak place in the terrace.

After viewing the damage to neighbors' farms, Emerson said, "Without those terraces my cornfield would have been ruined."

PAPER FROM SERICEA.—The chamber of commerce at Dalton, Ga., is looking into the possibility of getting a mill started there to make paper from sericea stalks.

V. H. Mock, a local farmer, and S. H. Christopher, land utilization conservationist, are encouraging such a project. Chamber of Commerce Secretary T. H. McMillan said one of the southern research bureaus had approved the feasibility of the manufacture of such paper, but the plan is still being investigated from an economic standpoint.

It is said that the sericea stalk can make fine grade paper as well as rough stock. And experiments indicate that the sericea paper has many of the better qualities of rice paper used for cigarettes.

FLORIDA TAKES TO AIR.—Florida's Flying Farmers went to the Miracle Soil Conservation Day at Sanford last spring. They left with a feeling that they could help in selling the need for soil and water conservation.

First result: 75 farmers, supervisors, and businessmen made an aerial tour of Pineallas Soil Conservation District 2 months later, the first of its kind in Florida. The Flying Farmers Association was host, and members provided and piloted the planes free of charge.

Flying Farmer President G. F. Ward offered the facilities of his group at any time, without cost, anywhere in the State, to further soil and water conservation work.

FARM TELECAST.—The Miracle Soil Conservation Day at Sanford, Fla., was presented on television June 29 from WCBS-TV, New York. Following the telecast, the film was forwarded to W. E. Witherell, district conservationist at Orlando, Fla., who planned showings in theaters at Orlando and Sanford.

UPPER MISSISSIPPI

QUALIFIED FOR PRIZES.—A new angle to a farm face lifting in the Mills County (Iowa) Soil Conservation District this year was a special prize drawing for farmer-helpers.

The face lifting was on the 160-acre farm of Eurel H. Anderson near Silver City. It was sponsored by the Mills County District, Radio Station KFAB at Omaha, with the cooperation of local SCS men, the county agent, and other agricultural leaders.

Any farmer actually working on the farm for 5 hours in preparation for the event or on the day of the face lifting received a ticket for a drawing of prizes. First prize was a $1,340 farm tractor and second prize a $400 hydraulic scoop. Other prizes of lesser value also were given.

WESTERN GULF

Part of the crowd at Corney Lake fish fry.

DECADE OF HIGH ACHIEVEMENT.—The D'Arbonne (La.) Soil Conservation District celebrated its tenth anniversary in August with a special program and fish fry at Corney Lake. Twelve hundred farmers and business people were there.

The Louisiana Bankers Association presented certificates of merit to 43 district cooperators for outstanding work in soil conservation. Kent Leavitt of Millbrook, N. Y., president of the National Association of Soil Conservation Districts, praised the Louisiana State government for its wisdom in appropriating $800,000 to help districts carry on their work. He also commended the bankers for their interest in soil conservation. He was introduced by W. T. Nolin, president of the Louisiana Association of Soil Conservation District Supervisors.

Lt. Gov. William J. Dodd of Louisiana said of the 43 farmers receiving certificates of merit: "Well done, good and faithful servants."

E. T. Powell, chairman of the D'Arbonne District board of supervisors, told the audience that since the district began operations cooperating farmers had planted cover crops on 57,026 acres, seeded 20,478 acres to improve pastures, planted pine trees on 8,000 acres, practiced conservation management on 32,058 acres of farm woodlands and selective tree cutting on 19,970 acres, and built 327 stock ponds and 4,600 miles of terraces. There are conservation plans on 2,129 district farms covering 302,315 acres.

—S. Ray Aycock.

NORTHERN GREAT PLAINS

SOLD ON GRASS-LEGUME MIXTURES.—Edwin W. Aune, near Wilton, N. Dak., finds that grass-legume mixtures in the crop rotation more than pay their way.

"Last year," he said, "I got a cash income of $25 and 2½ tons of hay from an acre of cropland that had been seeded to bromegrass and alfalfa. Aside from the original seeding, the only expense was the two harvesting operations. Net income per acre was the highest of any field on the farm."

Aune explained this field was seeded to fit in with his program of including grass-legume mixtures in the crop rotation on his 240-acre farm. This was but one of the conservation measures included in the farm conservation plan he worked out with the help of Clifford G. Wahl, SCS technician.

STOPPED THE BLOWING.—If you're going to farm light land successfully you'd better figure on stubble-mulch tillage, strip cropping, and shelter belts and get a land capability survey so that you won't try to farm land you'd better leave in grass.

Alfred Hochgraber, near Galesburg, N. Dak., a cooperator with the West Traill County Soil Conservation District, started from scratch 4 years ago on a section of land that was in grass. Except for a low area, into which the rest of the farm drains, all of the section was broken out.

"Part of the farm is pretty sandy," he said. "I knew I'd have to strip-crop and probably plant windbreaks, but I thought I could get by with block farming for a few years on new land. But I found out differently. The sandy parts of the farm blew. And then, crops didn't do much on another part of the farm."

He started cooperating with the soil conservation district and, with the help of Allen Fick of SCS, worked out his present farm conservation plan. He learned that the land that produced poorly was too salty for crops and that proper drainage would improve the rest of the heavier land.

Technicians designed a drainage system to clear the heavier land more rapidly and spread the water on native pasture. They laid out a farmstead windbreak and a series of shelter belts on the sandy land, and helped set up a strip-cropping system which will be established in 1950. Hochgraber is starting to use grass in the crop rotation.

He will farm in strips with stubble-mulch tillage on the lighter land. In 1948 he built the drainage system and planted the farmstead windbreak and two of the shelter belts. He planted more shelter belts in 1949 and summer-fallowed the sites for 1950 plantings.

He explained that he has found it necessary to change his stubble-mulch tillage system somewhat from the way he started out. He used to plow in fall, then in spring drag the straw back to the surface. He has now learned it is necessary to keep the stubble and straw on the surface during the winter, too. That means starting stubble-mulch tillage in the fall.

GRASSLAND NEEDED PROTECTION, TOO.—Usually diversions are built to protect cropland from the runoff from grassland farther up the slope, but on the farm of Orville Childs near Belleville, Kans., conservation on the cropland is protecting his grassland. Childs is a cooperator with the Republic County Soil Conservation District.

A large steep-sided draw crosses the farm and receives the drainage from a large area. The deep draw with steep banks runs through the pasture below the cropland. The cropland is on the more gently sloping upland.

"People say that grassland won't gully if you keep it well covered," Childs said, "but it will gully here. The cropland was gullying, too."

Childs started cooperation with the soil conservation district in 1946, getting Roy D. Crist of SCS to work out his conservation plan. The land capability survey showed that little change in land use was needed.

The plan includes grassed waterways to dispose of excess water safely, terracing and contour farming, inclusion of grass and legumes in the long-time crop rotation, and improved pasture management.

Childs pointed out that water from the cropland came straight downhill and concentrated into small streams which plunged over the bank and damaged the grassland.

Now, contours hold a lot of the water where it falls and the terraces break the slope into several short stretches so that the water which the contours cannot hold doesn't get a chance to form into streams.

The terraces carry the water slowly to places where waterways were built and can let the excess water down into the drainage with safety. The smaller gullies that had been cut by the water have healed over and the big gully is healing rapidly. Grass is beginning to creep down the sides.

TAKING A LOOK AT THE ROOTS.—Large groups of Emery County, Utah, landowners have been visiting the farm of Ed Bringerhoff near Lawrence this fall to view a plot where SCS technicians are demonstrating methods of determining the most beneficial amount of water to apply to soils in this area.

Roots of most plants gather water from the soil within the first 3 feet and therefore it is folly to irrigate deeper than the penetration depth of roots, which varies for different plants. Not only is too-deep irrigation wasteful of water, but it also carries the soluble plant food too deep into the soil, putting it beyond reach.

Marvin Barney, soil scientist, shows charts depicting the root systems of various field crops and explains the advantages and disadvantages of different methods of irrigation. Emphasis is placed on the fact that proper irrigation practices are among the ways farmers can help to save the topsoil that makes the difference between profit and loss.

SOUTHWEST

EQUIPMENT COSTS.—Ten cents a cubic yard is the average cost of moving earth to level land in the Gila Valley Soil Conservation District, Ariz. But it is some-

times done with district-owned equipment for as little as 8½ cents.

This is the only Arizona district that has gone in for equipment ownership and operation in a big way. That end of its activities involves much serious planning and sound administration, because so much money is involved.

In 1948 rentals on district equipment came to $40,138. Wages of the superintendent who looks after it and the men who operate it totaled $13,134. Outlay for repairs was $7,164; for fuel and oil, $4,090. Industrial insurance alone ran to $699. There were other smaller items, too.

Any of the 300-odd farmers who work the 35,000 acres of cultivated land in Graham is eligible to rent the equipment after applications have been approved by the board of supervisors and the necessary engineering has been done by technicians of the Soil Conservation Service. Actually, 187 farmers with 20,900 acres are cooperating. This isn't to say that the others are not carrying on soil and water conservation practices; many are doing so but without SCS technical assistance and without any formal agreements with the district.

Rental rates, on an hourly basis, have been the same for the last 3 years. Since every job is checked by SCS, it is easy to figure costs on a basis of actual accomplishment. Those records show that land leveling ranges from 8½ to 12 cents per cubic yard of earth moved, and the average is 10 cents.

When the district made heavy machinery available, it was for the first time possible for Graham farmers to engage in conservation measures at a cost they could afford. When a few examples had shown how much water could be saved and how much better crops could be grown, there was far more work to be done than could possibly be done with district equipment. So private contractors moved in to take up the slack, and district costs have served as a yardstick to hold charges in line.

PRACTICAL TIPS ON PLANTING GRASS SEED.—Farmers and ranchers in New Mexico's Roosevelt and Border Soil Conservation Districts are constantly on the lookout for the best means of planting grass seed.

Interest in methods and machines has become widespread because farmers are planning to retire to permanent pasture thousands of acres now in cultivation. They believe grass to be the most profitable crop on those fields which are subject to erosion.

Bert Roy, district farmer about a mile north of Rogers, has developed a grass-seed planter which has given him excellent results.

Roy says his machine is a simple planter which any farmer or group of farmers should be able to assemble and operate. It is equipped with eight regular lister beams on a tool bar, spaced 20 inches apart. An 8-inch furrow opener that will make a furrow large enough to hold the average rainfall in this area is attached to each beam. A special-type seed dropper which cost $2 has been installed in each of the four planter boxes on the machine.

Roy explains that the droppers can be adjusted to plant any desired rate of lovegrass seed per acre. A tin divider is located directly under the seed boxes so that half of the seed can be diverted into each of two rows, thus planting eight rows at a time. A burlap bag containing about 15 pounds of dirt is dragged along each furrow to cover the seed. He has found that he can seed between 40 and 50 acres a day with this machine.

Roy completed the planting of weeping lovegrass on 480 acres of old cultivated fields early last July, using 1 pound of seed per acre. He planted the entire acreage on the contour. The contour furrows caught and held most of the rain where it fell, and the grass made an excellent stand.

Weeds grew from 2 to 3 feet high over most of the field, as is usually the case with lovegrass plantings. These weeds shaded and protected the small grass plants in the furrows. When the weeds were killed by frost in the fall they were allowed to remain as protection against wind erosion and to hold snow on the field during the winter.

Soil Conservation Service technicians working with the Border and Roosevelt Soil Conservation Districts report that farmers and ranchers who have made lovegrass plantings in furrows have had much better success than where the seed was broadcast on flat lands.

GETTING THE LAND READY.—Land preparation and special tillage operations were demonstrated last fall to 100 farmers, bankers, and businessmen on the Lois White farm near Spanish Fork, Utah, in the Nebo Soil Conservation District. The purpose was to show how land which has been packed by the use of heavy machinery in land leveling operations can be loosened to stop erosion, permit penetration of irrigation water, and increase crop production.

Technicians discussed leveling and land preparation in its various phases. Equipment-concern representatives explained the use of each piece of machinery.

THREE COLORADO FARMS TRANSFORMED.—Almost every type of soil and water conservation practice necessary for efficient and profitable farming in Fremont County, Colo., was seen by more than 2,000 persons who attended the "Save Our Soil" demonstration sponsored by the Fremont Soil Conservation District near Canon City last September.

Land leveling for better distribution of irrigation water was included. There was also plowing under of green manure crops to add organic matter to the soil, drainage to reclaim and make better use of bottom lands, bank sloping and streambank protection, irrigation structures to control the flow of irrigation water, numerous irrigation methods, and the establishment of wildlife areas.

The demonstration was held on the adjoining farms of J. G. Shoun, T. E. Cook, and M. A. Colon, cooperators of the district. Certain practices were applied well in advance, and others were carried out during the day.

Local farm implement dealers donated the use of machinery and also set up one of the largest equipment displays ever seen in this part of the country. A huge machinery parade was staged in Canon City the afternoon before the demonstration. Entertainment was provided by a community square dance. Members of 4–H Clubs served a barbecue dinner.

PUBLIC LIBRARY
DEC 31949
DETROIT

U. S. GOVERNMENT PRINTING OFFICE: 1949